BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents *will not* correct images, please do not report the images to the Image Problem Mailbox.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/753,221	12/29/2000	Joshua I. Coates	SCAL.P0005	9347

7590 06/02/2004

CHRISTOPHER K. GAGNE
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 90025

EXAMINER	
PRIETO, BEATRIZ	
ART UNIT	**PAPER NUMBER**
2142	

DATE MAILED: 06/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/753,221	COATES ET AL.	
	Examiner	Art Unit	
	B. Prieto	2142	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 December 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to Application No. 09/753,221 filed 12/29/00, claims 1-18 have been examined.

2. Acknowledge is made to U.S. provisional patent Application Nos. 60/186,693 and 60/186,774 filed March 3, 2000. Co-pending application 09/695,499 filed October 23, 2000 warrants no double patenting rejections with the claims as filed therein and instant application.

3. Claim 9 is rejected under 35 U.S.C. § 101, which reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claim 9 is rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter. In this case, computer-related inventions whether descriptive or functionally descriptive material are non-statutory categories when claimed as descriptive material *per se* (see *Warmerdam, 33 F.3d at 1360 USPQ2d at 1759)*, falling under the "process" category (i.e. inventions at that consist of a series of steps or acts to be performed). See 35 U.S.C. 100(b) ("The term process means, art, or method, and includes a new of a known process, machine, manufacture, composition of matter or material"). Functional descriptive material: "data structures" representing descriptive material *per se* or computer program representing computer listing *per se* when embodied in a computer-readable media are still not statutory because they are not capable of causing functional change in the computer. However, claimed computer-readable medium encoded with a data structure defined structural and functional interrelationships between the data structure and the computer software and hardware component, which permit the data structure's functionality to be realized, and is thus statutory (see MPEP 2106).

5. Regarding claim 1, it is noted that claim limitation describes transferring said object file to said client request. It is understood that data is transferred from one location to another, thereby most likely, this is a typographical error, thus "client request" has been interpreted as being an entity with receiving capabilities (see claim 5) and not a request as recited.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this office action:

(a) a patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention as made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over HEIL et. al. U.S. Patent No. 6,173,374 (Heil hereafter) in view of Chow et. al. 6,148,349 (Chow hereafter).

Regarding claim 18, Heil teaches substantial features of the invention as claimed, teaching a storage cluster system (Figs. 1-2) comprising;

generating file request to retrieve a file, said request comprising a request for a particular file (see col 2/lines 59-65);

an interconnect fabric (121 of Fig. 2) for receiving requests to retrieve an object file (see col 4/lines 21-40),

plurality of intelligent storage subsystem (250, 260, and 118 of Fig. 2) within a nodes (150/151) in a clustered computer environment ("storage node") (see abstract, col 1/line 9-23, col 1/lines 56-col 2/line 9), wherein an intelligent storage node comprises one central processing unit (CPU) (100 of Fig. 1) and

a plurality of disk drives (118 of Fig. 1) for storing a plurality of files (see col 1/lines 56-col 2/line 9),

wherein an intelligent storage node comprises processes for determining whether said file of said request is located in one of said disk drives (see Fig. 3), and

processes for broadcasting (see col 12/lines 8-19, 26-33) over said interconnect fabric, an identification of said object file if said object file is located in said intelligent storage node (col 3/lines 66-col 4/line 20), however Heil does not explicitly disclose that the files are objects.

Chow teaches a system/method related to storage systems for uniquely identifying data objects in a file system associated with a storage system (abstract), including means for accessing said data objects using unique identifiers for said data object (col 3/lines 21-35).

It would have been obvious to one ordinary skilled in the art at the time the invention was made given the teachings Heil of a distributed storage cluster system interconnected via a communication medium such as a fibre channel or fabric backbone, which makes use of unique addresses to connect to other processors and/or peripherals to include Chow's teachings related to storage systems for uniquely identifying data objects in a file system associated with a storage system. Motivation would be enable

Heil's system with scalable and fault tolerant characteristics without the need of independent naming services.

8. Claims 1-2, 5-10, 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heil U.S. Patent No. 6,173,374 in view of Yu U.S. Patent No. 6,351,775

Regarding claim 1, Heil teaches substantial features of the invention as claimed, teaching

interface (230) receiving a request to access an file (col 4/lines 30-50 and col 3/lines 33-34);

storage nodes (250, 260 and 118) for storing files (abstract, col 7/lines 57-col 8/line 7, storing col 1/lines 58-col 2/line 6);

interface (240 and 270) for receiving said request for said file and identifying an intelligent storage node that stores said requested file (col 4/lines 8-20, 51-67) for a particular file (see col 2/lines 59-65), retrieving accessed said file in said identified intelligent storage node and transferring said file to said requesting client (col 4/lines 8-20, 51-67, and col 11/lines 64-col 12/line 7); however Heil does not explicitly teach selecting a node for managing a request;

Yu teaches receiving a request for an object file (col 6/lines 6-13 and Fig. 4), wherein the request is received from a client (202-203) (Fig. 2, col 5/lines 56-62, col 7/lines 39-57), wherein the request object file request includes an unique identifier (abstract, col 1/lines 56-col 2/line 3), including selecting a node to manage the received request and forwarding said request thereto (col 4/lines 20-22, 39-44, col 6/lines 22-25 and Figs. 6, 9 and 12).

It would have been obvious to one ordinary skilled in the art at the time the invention was made given the teachings of Heil for a storage system for managing request for file data at storage subsystems, including distributing request processing between the storage subsystems to thereby reduce the workload thereon. Load balancing techniques would be readily apparent to one ordinary skilled in the art. The teachings given the suggestions of Heil and the teachings of Yu for selecting one of a plurality of nodes for processing and managing an object file request from a client, including identify a node that stores the object file based on the object file identifier in the request and select one node to load balance request in the system, as taught by Yu. Motivation would be enable a dynamic load balance scheme, which adjusts the selection to the current workload state of the nodes.

Regarding claim 2, wherein said interface comprises selecting mean for selecting one of said control nodes to load balance client requests in said storage system and switching means ("load balancing

switch") for redirecting or routing said request to said selected one of said control node (Yu: col 4/lines 20-22, 39-44, col 6/lines 22-25 and Figs. 6, 9 and 12).

Regarding claim 5, a data cache for storing said object file in said control node when transferring said intelligent storage node to said client (Yu: col 8/line 65-col 9/line 10 and Heil: col 7/lines 9-11, 20-26, col 11/lines 27-35).

Regarding claim 6, said control nodes further comprising:

a reference that identifies one intelligent storage node for storage of one of said object files (Heil; map see col 4/lines 51-57, or directory see col 5/lines 1-9, Yu: 1220 of Fig. 12, map object class-to-server col 10/lines 64-col 11/line 10);

processes for determining whether said object file is identified on said reference (Heil col 4/lines 8-20, 51-57, col 5/lines 1-9, determine col 11/lines 3-10);

processes for broadcasting a request for said object file to said intelligent storage nodes using a ("multi-cast") protocol if said object file is not identified on said reference (Heil: col 12/lines 8-19, 26-33, col 3/lines 66-col 4/line 20, 51-57 and col 10/lines 33-36); said intelligent storage node further comprising:

processes for determining whether said object file is stored therein (Heil: col 4/lines 8-20, 51-63);

processes for broadcasting, to said control nodes an identification of one of said intelligent storage nodes that stores said object file if said object file is located (Heil: col 5/lines 1-9 and col 12/lines 12-33); and

said control nodes further comprising processes for updating said reference at said control nodes to include said identification of said object file (Heil: col 12/lines 44-47 and col 11/lines 36-38).

Regarding claim 7, wherein two of said intelligent storage nodes store an object file (Yu; col 4/lins 3-8).

Regarding claim 8, one additional storage center located remotely ("geographically disparate") from said storage center (Heil: Fig. 2, Yu: col 5/lines 64-col 6/line 9).

Regarding claim 9, this claim comprises substantially the same features as those discussed on claims1-2 and 6, same rationale of rejection is applicable. Further limitation recites, establishing a connection

between said control node and said storage node if said object file is stored in one of said intelligent storage node (Heil: col 11/lines 54-65).

Regarding claim 10, selecting one of said control nodes to load balance client requests to said storage center (Yu: col 4/lines 20-22, 39-44, col 6/lines 22-25 and Figs. 6, 9 and 12).

Regarding claim 13, caching said object file in said control node when transferring said intelligent storage node to said client (Heil: col 7/lines 9-11, 20-26 and col 11/lines 27-35).

Regarding claim 14, comprises features substantially the same as those discussed on claims 6 and 9, same rationale of rejection is applicable.

Regarding claim 15, establishing a point to point connection between said control node and one of said intelligent storage nodes if said object file is not found from said multi-cast protocol broadcast (Heil: col 4/lines 51-57, col 10/lines 33-26, col 12/lines 12-18); determining whether said object file is located in said intelligent storage node (col 4/lines 8-20, 51-57 and col 11/lines 3-10); and repeating the steps of establishing a point to point connection and determining whether said object file exists with said intelligent storage nodes until said object file is located (Heil: col 4/lines 51-57, col 10/lines 33-26, col 12/lines 12-18).

Regarding claims 16-17, these claims are substantially the same as those discussed on claims 7-8, same rationale of rejection is applicable.

9. Claims 3-4 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heil in view of Yu in further view of Isaak U.S. Patent No. 6,622,247

Regarding claims 3-4 and 11-12, however the above-mentioned prior art do not teach fingerprinting as a form of object identification and the user of certificates and keys as identification mechanisms

Isaak teaches a fingerprint identification that uniquely identifies an digital object (col 1/lines 15-32, 47-51, 53-61); and means for certifying the digital object, testing its validity and conforming its authenticity (col 2/lines 56-41); further teaching the use of certificates and keys as means for authenticating or validating an entity, including a certificate the includes a key with which the certificate

is decrypted, since the key is only provided to the legitimate entities involved in the transaction it provide means of authenticating or validating participants (col 3/lines 28-60).

It would have been obvious to one ordinary skilled in the art at the time the invention was made given Heil teachings for storing, accessing and distributing digital content the teachings of Isaak for securing said access would be readily apparent. Given the combine teachings uniquely identifying object file for a client request and in storage system using object finger printing, further including validating legitimate clients via certificate and key identification mechanisms, with corresponding successful/failure indications, would be readily apparent. Motivation to combine the teachings would be to enable unique identification and integrity validation of object files without central management, highly appropriated for Heil clustered distributed environment.

10. Applicant is reminded of 37 CFR 1.530 (e) Status of claims and support for claim changes. Whenever there is an amendment to the claims pursuant to paragraph (d) of this section, there MUST also be supplied, on pages separate from the pages containing the changes, the status (i.e., pending or canceled), as of the date of the amendment, of all patent claims and of all added claims, and an explanation of the support in the disclosure of the patent for the changes to the claims made by the amendment paper (see MPEP 2234). There is a strong presumption that an adequate written description of the claimed invention is present in the specification as filed, Wertheim, 541 F.2d at 262, 191 USPQ at 96; however, with respect to newly added or amended claims, applicant should show support in the original disclosure for the new or amended claims. See MPEP § 714.02, and 2163.06. ("Applicant should specifically point out the support for any amendments made to the disclosure.") (see MPEP § 2163.04).

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prieto, B. whose telephone number is (703) 305-0750. The Examiner can normally be reached on Monday-Friday from 6:00 to 3:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's Supervisor, Jack B. Harvey can be reached on (703) 305-9705. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3800/4700.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to the Central Fax Office:

(703) 872-9306, for Official communications and entry;

Or Telephone:

(703) 306-5631 for TC 2100 Customer Service Office.

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington VA, Fourth Floor (Receptionist), further ensuring that a receipt is provided stamped "TC 2100".

B. Prieto
TC 2100
Patent Examiner
June 1, 2004